

WHAT IS CLAIMED IS:

1. An inputting device, which is disposed in an opening part of a cabinet, comprising:

in case that a plane being about parallel to the front surface of said cabinet is defined as an XY plane in an XY orthogonal coordinate system,

an elastic sheet that is made of a material having elasticity and flexibility or having only elasticity and is disposed inside said cabinet in about parallel to said XY plane in a state that the front surface of said elastic sheet faces the rear surface of the front side of said cabinet;

a sliding key that is fixed tightly on the front surface of said elastic sheet so that said sliding key is disposed at an about center of said opening part in a state that said sliding key is possible to move in an arbitrary direction on said XY plane; and

sensors that at least detect the moved direction of said sliding key on said XY plane.

2. An inputting device in accordance with claim 1, wherein:

 said sliding key has a rim part whose diameter is larger than that of said opening part.

3. An inputting device in accordance with claim 2, wherein:

 said sliding key is adhered to said elastic sheet at said rim part, and

 a space is formed on a part of the rear surface of said cabinet

5 at the position adjoining said opening part, and

 about the edge part of said rim part of said sliding key is disposed in said space.

4. An inputting device in accordance with claim 1, further comprising:

5 a first control signal generating means that generates a first control signal corresponding to at least the moved direction of said sliding key detected by said sensors, wherein:

10 said first control signal executes the change of the position of a subject to be controlled on a display.

5. An inputting device, which is disposed in an opening part of a cabinet, comprising:

5 in case that a plane being about parallel to the front surface of said cabinet is defined as an XY plane in an XY orthogonal coordinate system,

10 an elastic sheet that is made of a material having elasticity and flexibility or having only elasticity and is disposed inside said cabinet in about parallel to said XY plane in a state that the front surface of said elastic sheet faces the rear surface of the front side of said cabinet;

a surrounding key being a ring shape that is fixed tightly on the front surface of said elastic sheet;

15 a sliding key that is fixed tightly on the front surface of said elastic sheet so that said sliding key is disposed at an about center of said opening part in a state that said sliding key is possible to move in an arbitrary direction on said XY plane;

sensors that at least detect the moved direction of said sliding key on said XY plane; and

20 switches that detect whether said surrounding key is pushed in one direction in the XY directions or not.

6. An inputting device in accordance with claim 5, wherein:

said sliding key has a rim part whose diameter is larger than that of said opening part.

7. An inputting device in accordance with claim 6, wherein:
said sliding key is adhered to said elastic sheet at said rim part, and

a space is formed on a part of the rear surface of said
5 surrounding key, and

about the edge part of said rim part of said sliding key is disposed in said space.

8. An inputting device in accordance with claim 5, further comprising:

a first control signal generating means that generates a first control signal corresponding to at least the moved direction of said
5 sliding key detected by said sensors; and

a second control signal generating means that generates a second control signal corresponding to the pushed direction of one of the edges of said surrounding key detected by one of said switches; wherein:

10 said first control signal and said second control signal execute the change of the position of a subject to be controlled on a display.

9. An inputting device in accordance with claim 1 or 5, wherein:

a magnet is disposed in said sliding key, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane based on the change of the magnetic flux density from said magnet corresponding to

the movement of said sliding key.

10. An inputting device in accordance with claim 9, wherein:

said sliding key provides a concave part on a part of the surface where said sliding key is adhered to said elastic sheet, and

5 said sliding key is adhered to said elastic sheet by disposing said magnet in said concave part, and

said magnet is sealed in said sliding key.

11. An inputting device in accordance with claim 1 or 5, wherein:

guides being possible to be recognized optically are disposed on designated positions on said elastic sheet, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane by reading the movements of said guides optically corresponding to the movement of said sliding key.

12. An inputting device in accordance with claim 1 or 5, wherein:

a coil is disposed in said sliding key, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane based on the electromotive force generated by the electromagnetic induction by the movement of said sliding key in the magnetic field of designated power formed at the surrounding part of said coil.

13. An inputting device in accordance with claim 1 or 5, further comprising:

5 a pushing component, which is made of a material that is harder than said elastic sheet and whose friction factor is smaller than that of said elastic sheet, and which is disposed on the rear surface of said elastic sheet at the position corresponding to said sliding key;

10 a contact switch that detects that said sliding key was pushed in the inside direction of said cabinet by disposing at the position facing said pushing component; and

15 a third control signal generating means that generates a third control signal when said pushing component made said contact switch work; wherein:

15 said third control signal executes the selection or the decision of information indicating by a subject to be controlled on a display.

14. An inputting device in accordance with claim 13, further comprising:

5 an ignoring means that ignores said third control signal, in case that the amount of the movement of said sliding key on said XY plane is larger than a designated value.

15. An inputting device in accordance with claim 13, further comprising:

a printed circuit board on which said contact switch is disposed; and

5 a sheet that covers said printed circuit board disposed said contact switch.

16. An inputting device in accordance with claim 1 or 5, further comprising:

a bellows having a ring shape formed in said elastic sheet

outside the position where said sliding key is adhered to said elastic
5 sheet.

17. An inputting device in accordance with claim 1 or 5,
further comprising:

at least one of projections supporting said sliding key on the
rear surface of said elastic sheet.

18. An inputting device in accordance with claim 1 or 5,
further comprising:

a concave part formed on the front surface of said sliding
key.

19. An inputting device in accordance with claim 1 or 5,
further comprising:

a nonskid component disposed on the front surface of said
sliding key.

20. An inputting device in accordance with claim 1 or 5, further
comprising:

one or more projections formed on the front surface of said
sliding key.

21. An inputting device in accordance with claim 1 or 5,
wherein:

a group of keys except said sliding key is also formed on the
front surface of said elastic sheet in a unified state.

22. A mobile terminal, comprising:

in case that a plane being about parallel to the front surface

of a cabinet of a mobile terminal is defined as an XY plane in an XY orthogonal coordinate system,

- 5 a cabinet providing an opening part;
- an elastic sheet that is made of a material having elasticity and flexibility or having only elasticity and is disposed inside said cabinet in about parallel to said XY plane in a state that the front surface of said elastic sheet faces the rear surface of the front side of
- 10 said cabinet;
- a sliding key that is fixed tightly on the front surface of said elastic sheet so that said sliding key is disposed at an about center of said opening part in a state that said sliding key is possible to move in an arbitrary direction on said XY plane;
- 15 sensors that at least detect the moved direction of said sliding key on said XY plane;
- a displaying means that displays information; and
- a first controlling means that executes first control corresponding to at least the moved direction of said sliding key on
- 20 said XY plane detected by said sensors.

23. A mobile terminal in accordance with claim 22, further comprising:

- 5 a pushing component, which is made of a material that is harder than said elastic sheet and whose friction factor is smaller than that of said elastic sheet, and which is disposed on the rear surface of said elastic sheet at the position corresponding to said sliding key;
- a contact switch that detects that said sliding key was pushed in the inside direction of said cabinet by disposing at the position facing said pushing component; and
- 10 a third controlling means that executes third control when said pushing component made said contact switch work.

24. A mobile terminal in accordance with claim 22, wherein:

 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane, and

5 said first controlling means executes said first control corresponding to the moved direction and the amount of the movement of said sliding key.

25. A mobile terminal in accordance with claim 23, further comprising:

 a control stopping means that stops said third controlling means, in case that the amount of the movement of said sliding key on 5 said XY plane is larger than a designated value.

26. A mobile terminal in accordance with claim 23, further comprising:

 a printed circuit board on which said contact switch is disposed; and

5 a sheet that covers said printed circuit board disposed said contact switch.

27. A mobile terminal in accordance with claim 22, wherein:

 said first controlling means executes the change of the position displaying a subject to be controlled on said displaying means.

28. A mobile terminal in accordance with claim 23, wherein:

 said third controlling means executes the selection or the

decision of information indicating by said subject to be controlled on
5 said displaying means.

29. A mobile terminal in accordance with claim 22,
wherein:

 said sliding key has a rim part whose diameter is larger
 than that of said opening part,

5 said sliding key is adhered to said elastic sheet at said rim
 part, and

 a space is formed on a part of the rear surface of said cabinet
 at the position adjoining said opening part, and

10 about the edge part of said rim part of said sliding key is
 disposed in said space.

30. A mobile terminal, comprising:

 in case that a plane being about parallel to the front surface
 of a cabinet of a mobile terminal is defined as an XY plane in an XY
 orthogonal coordinate system,

5 a cabinet providing an opening part;

 an elastic sheet that is made of a material having elasticity
 and flexibility or having only elasticity and is disposed inside said
 cabinet in about parallel to said XY plane in a state that the front
 surface of said elastic sheet faces the rear surface of the front side of
10 said cabinet;

 a surrounding key being a ring shape that is fixed tightly on
 the front surface of said elastic sheet;

15 a sliding key that is fixed tightly on the front surface of said
 elastic sheet so that said sliding key is disposed at an about center of
 said opening part in a state that said sliding key is possible to move in
 an arbitrary direction on said XY plane;

sensors that at least detect the moved direction of said sliding key on said XY plane;

a displaying means that displays information;

20 a first controlling means that executes first control corresponding to at least the moved direction of said sliding key on said XY plane detected by said sensors; and

25 a second controlling means that executes second control corresponding to the pushed direction of one of the edge parts of said surrounding key.

31. A mobile terminal in accordance with claim 30, further comprising:

a pushing component, which is made of a material that is harder than said elastic sheet and whose friction factor is smaller than that of said elastic sheet, and which is disposed on the rear surface of said elastic sheet at the position corresponding to said sliding key;

a contact switch that detects that said sliding key was pushed in the inside direction of said cabinet by disposing at the position facing said pushing component; and

10 a third controlling means that executes third control when said pushing component made said contact switch work.

32. A mobile terminal in accordance with claim 30, wherein:

said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane, and

5 said first controlling means executes said first control corresponding to the moved direction and the amount of the movement of said sliding key.

33. A mobile terminal in accordance with claim 31, further comprising:

a control stopping means that stops said third controlling means, in case that the amount of the movement of said sliding key on
5 said XY plane is larger than a designated value.

34. A mobile terminal in accordance with claim 31, further comprising:

a printed circuit board on which said contact switch is disposed; and

5 a sheet that covers said printed circuit board disposed said contact switch.

35. A mobile terminal in accordance with claim 30, wherein:

5 said first controlling means and said second controlling means execute the change of the position displaying a subject to be controlled on said displaying means.

36. A mobile terminal in accordance with claim 31, wherein:

5 said third controlling means executes the selection or the decision of information indicating by said subject to be controlled on said displaying means.

37. A mobile terminal in accordance with claim 30, wherein:

5 said first controlling means executes the change of the position displaying a first subject to be controlled on said displaying means, and

said second controlling means executes the change of the position displaying a second subject to be controlled on said displaying means.

38. A mobile terminal in accordance with claim 37, wherein:

 said third controlling means executes the selection or the decision of information indicating by said first or second subject to be controlled on said displaying means.

39. A mobile terminal in accordance with claim 30, wherein:

 said sliding key has a rim part whose diameter is larger than that of said opening part,

5 said sliding key is adhered to said elastic sheet at said rim part, and

 a space is formed on a part of the rear surface of said surrounding key, and

10 about the edge part of said rim part of said sliding key is disposed in said space.

40. A mobile terminal in accordance with claim 22 or 30, wherein:

 a magnet is disposed in said sliding key, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane based on the change of the magnetic flux density from said magnet corresponding to the movement of said sliding key.

41. A mobile terminal in accordance with claim 40,

wherein:

 said sliding key provides a concave part on a part of the surface where said sliding key is adhered to said elastic sheet, and

5 said sliding key is adhered to said elastic sheet by disposing said magnet in said concave part, and

 said magnet is sealed in said sliding key.

42. A mobile terminal in accordance with claim 22 or 30, wherein:

 guides being possible to be recognized optically are disposed on designated positions on said elastic sheet, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane by reading the movements of said guides optically corresponding to the movement of said sliding key.

43. A mobile terminal in accordance with claim 22 or 30, wherein:

 a coil is disposed in said sliding key, and

5 said sensors detect the moved direction and the amount of the movement of said sliding key on said XY plane based on the electromotive force generated by the electromagnetic induction by the movement of said sliding key in the magnetic field of designated power formed at the surrounding part of said coil.

44. A mobile terminal in accordance with claim 22 or 30, further comprising:

 a bellows having a ring shape formed in said elastic sheet outside the position where said sliding key is adhered to said elastic
5 sheet.

45. A mobile terminal in accordance with claim 22 or 30, further comprising:

at least one of projections supporting said sliding key on the rear surface of said elastic sheet.

46. A mobile terminal in accordance with claim 22 or 30, further comprising:

a concave part formed on the front surface of said sliding key.

47. A mobile terminal in accordance with claim 22 or 30, further comprising:

a nonskid component disposed on the front surface of said sliding key.

48. A mobile terminal in accordance with claim 22 or 30, further comprising:

one or more projections formed on the front surface of said sliding key.

49. A mobile terminal in accordance with claim 22 or 30, wherein:

a group of keys except said sliding key is also formed on the front surface of said elastic sheet in a unified state.